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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/944,193	09/04/2001	Hideaki Yamanaka	110538	1200

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EXAMINER

RICKMAN, HOLLY C

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 04/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/944,193

Applicant(s)

YAMANAKA ET AL.

Examiner

Holly Rickman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13,24,26,28,29 and 31-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13,24,26,28,29 and 31-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/1/05.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-13, 24, 26, 28-29, and 31-35 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The originally filed disclosure fails to provide support for the claimed embodiment having a ferromagnetic atom-rich layer and a lattice spacing-adjusting layer in the same structure. It appears from the specification and drawings that there are two embodiments of the invention, one having a ferromagnetic atom-rich layer and the other having a lattice-spacing adjusting layer. There is no disclosure relating to how these two layers are combined into a single structure.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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4. Claims 29 and 31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 29 and 31 lack clear antecedent basis for "the recording layer" in line 5 of each claim. It is not clear from the claims if "the" recording layer and "a recording layer which is formed of a ferromagnetic material" are the same.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-13, 24, 26, 28-29 and 31-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Umeda et al. (US 6645646).

Umeda et al. disclose a magnetic recording medium having a ferromagnetic layer, a non-magnetic coupling layer, and a magnetic layer wherein a magnetic bonding layer is provided between the magnetic layer and the coupling layer and between the ferromagnetic layer and the coupling layer (see abstract). The structure taught by Umeda corresponds to the claimed structure as follows:

substrate/ferromagnetic/magnetic bonding/non-magnetic coupling/magnetic bonding/magnetic substrate/magnetic stabilizing/ ferromag atom-rich/non-magnetic/lattice spacing adjust/recording

Alternatively, it is noted that the lattice spacing adjusting layer can correspond to the any of the seed or under layers disclosed by Umeda which are located “between the recording layer and an underlying substrate” as claimed. It is noted that the above referenced layers taught by Umeda necessarily function in the claimed capacity of “lattice spacing-adjusting” because the crystal lattice structure of any of the layers taught by Umeda necessarily influences the crystal lattice of layers deposited thereon. See col. 6, lines 34-58 of Umeda for discussion of the seed/underlayer/intermediate layers located between the substrate and magnetic recording layer.

Umeda teaches that the magnetic bonding layer has a Co or Fe concentration that is higher than that of the ferromagnetic layer and the magnetic layer (col. 4, lines 4-37). The reference is silent with regard to the use of a bonding layer which contains 64-83 at% Co and with regard to the claimed relationship between the exchange coupling of the medium at 64 and 83% Co.

Umeda et al. teach that the relative concentration of Co or Fe in the bonding layer to that in the magnetic and ferromagnetic layers affects exchange coupling between the ferromagnetic and magnetic layers and ultimately affects thermal stability (col. 11, lines 25-28). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to optimize the amount of Co or Fe in the bonding layers taught by Umeda et al. since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

With respect to the relationship between exchange coupling of the medium at 64% Co versus 83% Co as set forth in claims 32-35, it is noted that this particular magnetic property depends on factors that are external to the medium (e.g. presence of an applied field and the

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strength of that field among other things). Exchange coupling is not merely a material property. Thus, the aforementioned limitation is a function of how the medium is *used* not just what its structure and composition is. For this reason, it is the Examiner's position that the aforementioned limitation does not patentably distinguish the claims over Umeda et al. because the structure taught by Umeda et al. is capable of meeting the claimed exchange coupling limitations in the presence of an appropriate applied field.

Response to Arguments

7. Applicant's arguments filed 1/14/05 have been fully considered but are not persuasive.

Applicant argues that Umeda et al. does not teach the newly added limitation directed to a lattice spacing-adjusting layer. For the reasons set forth above, the examiner respectfully disagrees.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Holly Rickman whose telephone number is (571) 272-1514. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Holly Rickman", written in a cursive style.

Holly Rickman
Primary Examiner
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March 28, 2005